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The reports given by USSR scientists (Academician M. M. Dubin and Doctors of Chemical Sciences Ya. I. Gerasimov, G. S. Zhdanov, K. T. Poroshin, V. V. Korshak, and Ye. D. Kaverzneva) were reproduced in detail in Russian and French in a special book published by the Academy of Sciences USSR. At the beginning of the congress, this book was distributed to the congress participants, and was widely approved by them.

Individual problems of a fairly general nature were given special discussion; for example, problems of the structure of wood cellulose and wood lignin and of the utilization of wood lignin. However, since there were few such discussions, scientific problems were often discussed outside the meetings.

The reports on the structure of matter drew considerable attention, although they did not accurately reflect the scope of investigations being conducted in this field. The report by R. Iepsius (Sweden) entitled "Interrelationships Between the Atomic Shell and the Atomic Nucleus" should be noted. This report represents a further extension of Mendeleev's periodic law, being based on the application of this law to the interpretation of the structure of atomic nuclei. Several reports dealt with the electronic structure of organic compounds and the contribution made by hydrogen bonds to the structure of these compounds. The report by G. S. Zhdanov and Z. V. Zvenkova, "Crystal Chemistry of Thiocyanates," was received with great interest. The critical remarks made by Zhdanov about Pauling's resonance theory, which had been applied by some authors of papers presented at the meeting, gave rise to a discussion in which L. Pauling participated. Pauling stated that the resonance theory can be used only as a formal method for mathematically defining the approximate structure of substances. Furthermore, he recognized that one of the main points of criticism advanced against the theory of resonance in Soviet scientific publications is justified, namely, that every actually existing chemical compound has only one structure which defines it and is peculiar to it.

In the group division on surface phenomena, three papers were given by members of E. Rideal's group (Great Britain). In this group division, Academician M. M. Dubinin presented his report "Adsorption of Gases and Vapors and the Structure of Adsorbents."

In the group division on electrochemistry, a report by the Czechoslovak scientist R. Brdicka was discussed. This report was devoted to recent developments in the field of polarographic methods of investigation and to the determination of reaction velocities in processes taking place at polarographic electrodes. In his report, Brdicka critically evaluated various equations which had been proposed for the determination of reaction velocities in polarographic processes and cited examples of satisfactory agreement between calculated values and experimental results.

In the group division on macromolecular chemistry, two review reports were presented, "Development of the Chemistry of Macromolecular Compounds Into a New Branch of Organic Chemistry," by H. Staudinger (West Germany), and "Progress in the Synthesis and Characterization of Macromolecules," by H. Mark (US).

At the meetings of the group division on macromolecular chemistry in Stockholm and at later meetings in Uppsala, a number of reports on the physical chemistry of proteins was presented. These reports dealt with applications of the ultracentrifuge (J. T. Edsall, US), separation of proteins by means of ion exchange resins (N. K. Boardman, Great Britain), polymerization of fibrinogen (J. D. Ferry, US), and other subjects. The only report which, properly speaking, dealt with the chemical constitution of proteins was that given by the Soviet delegate, Doctor of Chemical Sciences K. T. Poroshin.

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Research on the structure of cellulose, as reported in papers presented at meetings of the group division on cellulose, was based on the following methods: X-ray determinations, investigations of dielectric anisotropy, absorption spectroscopy in the infrared and ultraviolet ranges, electron microscopy, hydrolysis, and application of high pressures (up to 15,000 kg/sq cm). Most of these methods are not new. However, it appeared from statements made by H. Mark that other methods are also being applied, i.e., introduction of deuterium atoms and the method of nuclear resonance. No information on these methods was given in the reports.

Five reports were devoted to oxidative transformations of cellulose. One of these, entitled "Chemical Transformations of Cellulose in the Oxidation With Hypochlorite and With Hydrogen Peroxide," was presented by Ye. D. Kaverneva. This paper discussed a number of chemical transformations to which no references had been made in foreign work. After this report, many questions connected with it were asked by members of the audience.

The meetings of the group division on lignin were opened with a report entitled "On the Constitution of Cellulose," presented by K. Freudenberg of Switzerland [Circular No 3 of the Bureau of the International Congress of Pure and Applied Chemistry, Stockholm, refers to Prof Karl Freudenberg as being from Heidelberg, Germany]. The reports read at meetings of this group division discussed extensively the nature of the bond between lignin and carbohydrates and the question of the presence of carbohydrates in the lignin molecule itself. Industrial applications of lignin were also stressed, e.g., in part of a general review report by H. F. Lewis and in the final discussion. However, no fundamentally new ways for the utilization of lignin were proposed. Apparently, the empirical approach still predominates in this field: the chemical constitution of lignin has not yet been definitely determined, and the possibilities of its application are restricted by economic considerations connected with the necessity of recovering it from liquors. Utilization of hydrolysis lignin has not been mentioned at all.

Of considerable interest were the following review reports, presented at the congress: "The Separation of Isotopes by Thermal Diffusion," by K. Glusius (Switzerland); "From Abietic Acid to Lanosterol," by L. Ruzicka (Switzerland); "Progress in the Investigation of Sesquiterpenes," by F. Sorm (Czechoslovakia); and "The Thermal Decomposition of Hydrocarbons," by C. N. Hinshelwood (Great Britain). Most of Hinshelwood's report was of review of work on the thermal decomposition of hydrocarbons published by members of his group. Hinshelwood limited himself to examples of the behavior of $C_2 - C_4$ aliphatic hydrocarbons. He discussed the possible schemes of thermal decomposition with the formation of free radicals and the secondary reactions of free radicals with the initial and intermediately formed hydrocarbons. One section of his report dealt with the kinetics of hydrocarbon decomposition. This section examines the effect of pressure on the apparent reaction order within three pressure ranges, on the example of pentane.

In summary, the congress contributed nothing fundamentally new that could not have been extracted from published work. Nevertheless, the congress gave scientists from various countries an opportunity to familiarize themselves with scientific material which had been accumulated and to exchange opinions on important problems of contemporary chemistry.

An increased use of new physical and physicochemical methods is typical for the present stage of the development of chemistry. The congress participants saw proof of this when they visited the scientific institutions at Stockholm and Uppsala and an exhibition of apparatus held at the Stockholm Technological

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Institute. At the Physicochemical Institute in Uppsala, ultracentrifuges and other equipment used in molecular weight determinations, and equipment for the investigation of the course of chemical reactions by optical means were exhibited. At the Swedish Academy of Sciences, one could inspect a cyclotron, while at the exhibition numerous appliances for the separation of isotopes, chromatographic investigations, various optical and electrical determinations, etc. were shown. Most of these appliances were for automatic operation.

Soviet scientists took an active part in the congress. Their reports, which reflected achievements of Soviet science, were listened to with great interest, as shown by the numerous questions asked in connection with these reports both during and after the meetings.

After the congress ended, the participants toured the country and visited a number of chemical plants. The members of the Soviet delegation inspected a pharmaceutical plant, the Central Laboratory of the Swedish Cellulose Enterprises, and industrial plants which produce fertilizers and plastics.

In conclusion, one wishes to note the cordial reception given to the Soviet delegation by Swedish scientists.

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